TE (I.T.) - SEM V

O.F.C.D.

May 2014

15/05/14

QP Code : MV-18419

(3 Hours) **[Total Marks : 100**

N.B. 1. Question No 1 is compulsory.
2. Attempt any four out of the remaining six questions.

Q1. (a) Define and explain the following terms: i) Process ii) Process state iii) Multiprogramming iv) Time-sharing. **05**

(b) Draw and Explain process state diagram. Can a process make a transition from a ready state to the blocked state? Why or why not? **05**

(c) What is a system call? Explain any four system calls. **05**

(d) Explain effect of page size on performance. **05**

Q2. (a) Define the notion of a deadlock. Explain necessary and sufficient conditions for a deadlock to occur. What is the difference between a deadlocked state and an unsafe state? **10**

Q2.(b) Describe the difference between pre-emptive and non-pre-emptive scheduling algorithms. Which one is more suitable for a time-sharing system? Justify. **10**

Q3 (a) What are the different file allocation methods? Which file allocation method would you use for a system whose main task is database management? Why? **10**

Q3(b) Briefly explain the different modes of inter-process communication. **10**

Q4. (a) Briefly explain how message passing can be used to achieve mutual exclusion. Compare this technique with semaphores and monitors. **10**

(b) What is the critical section problem? Discuss a solution to the problem **10**

Q5 (a) There are five processes A to E which are waiting to be scheduled. Their arrival times are 0,1,3,9 and 12 sec respectively and their processing times are 3,5,2,5,and 5 seconds respectively. What is the average turn-around time using FCFS, SJF and Round-Robin(with a quantum of 1 sec) scheduling? **10**

Q5 (b) What are the requirements of memory management? Explain segmentation with the help of an example. **10**

Q6 a. What are processes and threads? What are the advantages and disadvantages of implementing threads in kernel space and user space? **10**

Q6 b. Compare and contrast any three disk arm scheduling algorithms. **10**

Q7. Short notes on: **20**

i) Unix File management
ii) I/O buffering
iii) Real Time Operating System
iv) RAID.

.....

Con. 9784-14.